UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
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JUL 25 2011

Ref: EPR-N

Mr. Jeff Rawson, Associate State Director
Bureau of Land Management
Utah State Office
P.O. Box 45155
Salt Lake City, UT 84134-0155

Re: Comments on Greater Natural Buttes Supplement to the Draft Environmental Impact Statement and Rating of the Draft Environmental Impact Statement
CEQ # 20110180 and 20100253

Dear Mr. Rawson:

In accordance with our responsibilities under Section 102(2)(C) of the National Environmental Policy Act (NEPA), 42 U.S.C. Section 4332(2)(C) and Section 309 of the Clean Air Act, 42 U.S.C. Section 7609, the U.S. Environmental Protection Agency Region 8 has reviewed the Bureau of Land Management's Greater Natural Buttes Supplement to the Draft Environmental Impact Statement (EIS). BLM prepared the Supplement in response to comments regarding air quality received on the July 2010 Draft EIS. This Draft Supplement presents much appreciated important new information, additional analyses, mitigation commitments by the applicant and a well-developed adaptive management strategy.

This letter also transmits the EPA's rating on the Draft EIS, in accordance with our responsibilities under the Clean Air Act Section 309. EPA is required to provide an independent review and evaluation of the potential environmental impacts of this project. You may recall that on October 1, 2010, the EPA reviewed and provided comments on the Draft EIS document, with the exception of the air quality impacts analysis. At that time, the BLM indicated their intent to provide an Air Quality Supplement to the Draft EIS and subsequently confirmed this intent in a press release published on October 19, 2010. Because the BLM was providing a Supplement focusing on air quality, the EPA withheld the rating on the Draft EIS until this supplement was completed and provided for public review. Therefore, the EPA's rating is based both on the July 2010 Draft EIS document (CEQ #20100253) and the Draft Supplement published in May 2011 (CEQ # 20110180). EPA understands that BLM is currently developing the Final EIS for Greater Natural Buttes and, in doing so, is addressing a number of additional concerns raised in our October 1, 2010 letter. While we await an opportunity to review and comment on this final document, we are required to provide our rating based on the Draft EIS.

Draft Supplement Comments

The Draft Supplement considers and analyzes the air quality impacts associated with a proposal by Kerr-McGee Oil and Gas Onshore LP, a wholly owned subsidiary of Anadarko Petroleum Corporation, to conduct infill oil and gas development in the Greater Natural Buttes Project Area in Uintah County, Utah. BLM analyzed four alternatives in the Draft EIS for infill development in the 162,911 acre project area, including the No Action Alternative. The Resource Protection Alternative is BLM's Preferred Alternative. This alternative consists of infill drilling of an additional 3,675 wells drilled at 40-acre surface spacing, from approximately 1,484 new well pads. Under this alternative, wells would be drilled at an average rate of 358 wells per year over a 10 year period. The Proposed Action Alternative would include the same number of wells and drilling rate, but would allow up to 20-acre surface spacing. The Optimal Recovery Alternative maximizes the recovery of natural gas resources with 13,446 new wells.

Our comments on the Draft Supplement are as follows:

1. Ozone – Wintertime Concentrations:
   The EPA appreciates and supports that the Draft Supplement presents the measured wintertime ozone concentrations, including time plots showing the measured ozone concentrations at two monitoring stations in the Uinta Basin for a one-year period from August 2009 to August 2010. We agree that current modeling capabilities do not allow for prediction of wintertime ozone concentrations and are pleased to see that the Draft Supplement addresses qualitatively the wintertime ozone issues, based on anticipated nitrogen oxides (NOx) and volatile organic compound (VOC) emissions.

   Measured ambient concentrations of ozone during the past two winters in the Uinta Basin have reached levels that are considerably above the National Ambient Air Quality Standard (NAAQS) of 75 ppb for an eight-hour average, which was promulgated by the EPA in 2008. The EPA has proposed to lower the primary 8-hour ozone NAAQS to a level between 60 – 70 ppb and to establish a distinct cumulative, seasonal "secondary" standard; regardless of the outcome of this decision, it is clear that the measured values are a concern for public health.

2. Ozone – Future Air Quality Modeling:
   The EPA is also pleased to see, and supports, BLM's commitment to remodel project-specific ozone impacts within two years of signing the Greater Natural Buttes Record of Decision, using an updated emission inventory, as well as updated monitoring and mitigation data. This change ensures current air quality conditions and potential air quality are both evaluated and disclosed; and is particularly important given recent ozone conditions in the vicinity of the project area. EPA understands from the Draft Supplement that this effort will likely be accomplished by isolating the project-specific emissions contribution from the BLM's Air Resources Management Strategy, which is also important in order to better understand cumulative air quality conditions in the Uintah Basin.

   Through this future modeling study, the BLM may also be able to determine whether additional mitigation measures committed to by the applicant would be able to reduce the predicted project increment of 2.4 ppb ozone presented in the Draft EIS and whether additional mitigation is needed. If modeling advances allow, this future modeling effort may also quantitatively address the potential for project impacts to wintertime ozone conditions.

3. Ozone – Impacts and Applicant Committed Mitigation Measures:
During review of the Draft EIS, EPA considered the predicted 2.4 ppb direct project impact for the Preferred Alternative to be a substantial adverse incremental increase in ozone. When this was added to an already measured adverse ambient ozone condition, the EPA determined the impact to be unacceptable from the standpoint of public health. Subsequently, the EPA has worked closely with the BLM during preparation of this Draft Supplement to develop a mutually agreeable approach addressing this concern. Specifically, EPA and BLM developed a comprehensive list of applicant-committed mitigation measures to decrease emissions of ozone precursors that will reduce emissions further than what was proposed and modeled in the Draft EIS. A further critical component of this agreed upon mitigation approach is an adaptive management strategy that includes additional mitigation measures to be triggered if certain conditions exist. Although the predicted incremental ozone reductions that will be achieved by implementation of the mitigation measures cannot be known until the future analysis and modeling is conducted, the EPA believes this overall mitigation approach will substantially reduce project air quality impacts through implementation of the agreed upon emission controls. Further, through the use of the adaptive management strategy, future modeling work and the ozone action plan will inform additional mitigation needs in the future to reduce adverse air quality impacts as the project progresses.

4. Near-Field HAPs and NO_2 Air Quality:
BLM has made substantial updates to the near-field air quality assessment in the Draft Supplement. The EPA commends the BLM for performing air quality modeling for concentrations of six hazardous air pollutants, particularly to ensure protection of residents of nearby communities. We are pleased to see that hazardous air pollutant concentrations will not exceed toxic screening levels or reference concentrations, and therefore that no adverse impacts are predicted from these pollutants.

   Near-field modeling conducted for the Draft Supplement also included an assessment of impacts to 1-hour NO_2 levels from drilling and production scenarios. The modeling showed exceedances of the 1-hour NO_2 standard for drilling scenarios with four rigs on adjacent pads spaced 400 to 800 meters apart. Although the EPA is concerned any time a model predicts exceedances of a health-based ambient air quality standard, impacts to 1-hour NO_2 will be very localized, with exceedances predicted to occur less than 200 meters from the drill rig locations. As such, the EPA supports the mitigation measures presented in Section 4.1.2.6 of the Draft Supplement to protect public health using an effective public health buffer zone or alternative mitigation to reduce NO_2 concentrations.

   EPA is also particularly interested in the natural gas fired drill rig pilot project, and the subsequent NOx emissions reductions that may result from more natural gas or liquid natural gas engine use in the Uintah Basin.

5. Far Field Air Quality:
The ozone emission reduction strategy presented in the Draft Supplement contains several provisions to reduce emissions of pollutants that have a may have a secondary affect to Air Quality Related Values (AQRVs), such as visibility impairment. We are encouraged that this emissions reduction strategy may ensure the direct project AQRV impacts from the Greater Natural Buttes Project to Class I and Sensitive Class II areas are minimized.

6. Environmental Justice:
   The EPA appreciates that Chapter 3 of the Draft Supplement includes an enhanced consideration of potential environmental justice communities in proximity to the proposed project area. We are also pleased to see that the Draft Supplement considers the potential for air quality impacts to EJ communities.

EPA's Rating

Based on the concerns, particularly as they relate to water resources protection (see below), raised in the EPA's October 1, 2010 letter to the BLM and this above review of the Draft Supplement, the EPA is rating this Draft EIS as "Environmental Concerns – Insufficient Information" (EC-2). The "EC" rating means that the EPA's review of the Draft EIS has identified potential impacts that should be avoided in order to fully protect the environment. Corrective measures may require changes to the preferred alternative or application of mitigation measures that can reduce these impacts. The "2" rating means that the Draft EIS does not contain sufficient information for the EPA to fully assess environmental impacts that should be avoided in order to fully protect the environment. The EPA's October 1, 2010, comment letter on the Draft EIS identified additional information that should be included in the Final EIS. We have enclosed a copy of the October 1, 2010, comment letter and a description of the EPA's EIS rating system for your convenience.

More specifically and with respect to **water resources protection**, the EPA conveyed in the October 2010 comment letter that oil and gas development associated with Greater Natural Buttes may present significant groundwater and surface water protection concerns. We stated that the potential for significant impacts to water resources appears to exist during all project stages, including drilling, well pad construction, production, hydraulic fracturing, produced water disposal, and freshwater withdrawal. Finally, and to enable BLM to fully disclose and mitigate impacts, we recommended that groundwater resources be further characterized in the Final EIS and that there be a plan for monitoring and mitigating potential impacts to water resources.

Thank you and your staff for working so closely with us in recent months to discuss and develop mutually agreeable solutions to our concerns. The EPA also appreciates your commitment to ensuring adequate analysis and full public disclosure of potential impacts, as well your efforts to achieve improved environmental outcomes, in the preparation of this Draft Supplement. If you have any questions regarding our comments or this rating, please contact Suzanne Bohan, Deputy Director of the NEPA Compliance and Review Program at (303) 312-6925. You may also contact Molly Brodin, lead reviewer for this project, at (303) 312-6577 or brodin.molly@epa.gov.

Sincerely,

Carol L. Campbell

Carol L. Campbell
Assistant Regional Administrator
Office of Ecosystems Protection
and Remediation

Enclosures (2)

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OCT 01 2010

Ref: 8EPR-N

Jeff Rawson, Associate State Director
Bureau of Land Management
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P.O. Box 45155
Salt Lake City, Utah 84145-0155

Re: Comments on the Greater Natural Buttes
Draft Environmental Impact Statement
CEQ # 20100253

Dear Mr. Rawson:

The U.S. Environmental Protection Agency (EPA) Region 8 has reviewed the Greater Natural Buttes (GNB) Draft Environmental Impact Statement (EIS) prepared by the Bureau of Land Management (BLM) in response to a proposal by Kerr-McGee Oil and Gas Onshore LP (KMG), a wholly owned subsidiary of Anadarko Petroleum Corporation, to conduct infill oil and gas development in the Greater Natural Buttes Project Area (GNBPA) in Uintah County, Utah. Our comments are provided for your consideration pursuant to our responsibilities and authority under Section 102(2)(C) of the National Environmental Policy Act (NEPA), 42 U.S.C. Section 4332(2)(C), and Section 309 of the Clean Air Act (CAA), 42 U.S.C. Section 7609. It is EPA's responsibility to provide an independent review and evaluation of the potential environmental impacts of this project, which includes a rating of the environmental impact of the preferred alternative and the adequacy of the NEPA document.

PROJECT BACKGROUND

Four alternatives for infill development in the 162,911 acre GNBPA are analyzed in the Draft EIS. The No Action Alternative would continue drilling and completion of previously approved wells, adding 1,102 wells to the 1,562 wells existing in October 2007. The Proposed Action Alternative consists of KMG's proposed infill drilling of an additional 3,675 wells drilled from a maximum of 3,041 well pads. Up to 20-acre surface spacing would be allowed under this alternative. Wells would be drilled at an average rate of 358 wells per year over 10 years. The Resource Protection Alternative is BLM's Preferred Alternative. This alternative consists of the same number of wells as the Proposed Action, but well pads would be limited to 40-acre surface spacing. Thus, there would be approximately 1,484 new well pads, leading to a reduction of surface disturbance for this alternative. The drilling rate and bottom-hole spacing would be the same as the Proposed Action. The Optimal Recovery Alternative maximizes the recovery of

natural gas resources by increasing well spacing (surface and bottom-hole) to 10-acres. Under this alternative, 13,446 new wells would be drilled over a period of 20 years.

BIFURCATED REVIEW PROCESS

EPA and BLM have met and conferred several times to discuss the type of air quality assessment approach needed in order to provide a comprehensive analysis of the impacts to air quality from GNB. BLM has committed to present this additional air quality analysis in a supplement to the Draft EIS and will notify the public of this commitment as well as the future availability of the supplemental information for public review and comment. Therefore, in this letter EPA is providing our comments on the Draft EIS except for those related to air quality. EPA will reserve our comments on the air quality impacts from GNB and the air quality analysis in the Draft EIS until EPA has had an opportunity to review the additional air analysis during the public comment period. EPA will provide a rating of the overall Draft EIS, as supplemented, at that time. EPA refers to this process as a "bifurcated review process." EPA believes that bifurcation provides an effective means of ensuring adequate analysis and full public disclosure of potential impacts, as well as opportunity for improved environmental outcomes. EPA commends BLM's willingness to provide additional air quality analysis that we believe is critical to understanding the impacts of GNB. We are committed to assisting BLM with preparation of the supplemental air quality information to ensure that it addresses our significant air quality issues for GNB.

EPA ISSUES

Based on EPA's review of the Draft EIS, we have identified several significant issues with the project. Our three primary issues are air quality impacts to ozone, near-field air quality impacts, and impacts to surface and ground water resources. As discussed above, EPA is deferring comments on air quality impacts. EPA's review is based on the Resource Protection Alternative; if BLM selects a different alternative as the Preferred Alternative, we may have additional comments.

We have briefly highlighted our water resource issues in this letter. In addition, the enclosed detailed comments provide further discussion of our significant concerns regarding protection and characterization of water resources, as well as our comments on potential impacts to environmental justice communities, impacts to special status species, clarification of jurisdiction in the project area, spill prevention, and reclamation potential in the GNBPA. We note that we found the discussion of cumulative impacts provided in Chapter 5 to be thorough, and appreciated the useful inclusion of relevant technical information in the Appendices to the Draft EIS.

EPA believes that groundwater and surface water protection is a significant issue associated with the GNB oil and gas development. The potential for significant impacts to water resources exists during all project stages, including drilling, well pad construction, production, hydraulic fracturing, produced water disposal, and freshwater withdrawal. A complete

monitoring plan and program to track any surface water or groundwater impacts as drilling and production operations occur should be included in the EIS. Mitigation measures should also be developed and implemented for this project to protect both surface and ground water. For example, we note that the characteristics of the Bird's Nest Aquifer may lead to difficulties in adequate casing construction for production and disposal wells and may require specific mitigation measures.

Characterization of the location and quality of groundwater resources present in the project area is critical to understanding potential for impact; however, the Draft EIS presents only a general discussion of project area aquifers. Substantially more detail characterizing groundwater resources should be provided in the Final EIS. EPA does not believe that deferring a detailed groundwater evaluation to site-specific well reviews provides a complete analysis of cumulative environmental impacts to the aquifers. Further detail and clarification on the proposed produced water management is also needed in the Final EIS. The Draft EIS indicates that produced water would be disposed of via underground injection wells, but also includes the possibility of trucking low-quality produced water that is ineligible for injection to existing water disposal and treatment facilities or recycling of produced water. The Final EIS should assess potential impacts from disposal wells and alternative disposal methods. The associated environmental impacts of fresh water use should also be evaluated in the Final EIS.

EPA additionally considers impacts to surface water from runoff as a significant issue for the proposed project. Runoff of sediment and salts is noted in the Draft EIS as a concern in the GNBPA, and we believe that salt and sediment impacts to surface water in the project area should be given significant attention during planning and construction for GNB.

Thank you for the opportunity to comment on this Draft EIS. We look forward to working with you during preparation of the air quality supplement to this document. If you have any questions about our comments, please contact me at 303-312-6004, or you may contact Molly Brodin of my staff at 303-312-6577.

Sincerely,

Larry Svoboda
Director, NEPA Compliance and Review Program
Office of Ecosystems Protection and Remediation

Enclosure: EPA's Detailed Comments

cc: Daniel Picard, U&O Agency Superintendent, BIA
Frances Poowegup, Vice-Chairwoman, Ute Indian Tribe

EPA'S NON-AIR-QUALITY-RELATED DETAILED COMMENTS FOR THE GREATER NATURAL BUTTES DRAFT EIS

Water Resources – Groundwater Source Protection

Groundwater Characterization:

Characterization of the location and quality of groundwater resources in the project area is critical to understanding potential for impact, as is monitoring to ensure prevention of future impact. The Draft EIS presents only a general discussion of project area aquifers, and does not clearly describe whether any drinking water wells are in the project area. Significantly more detail characterizing groundwater resources is needed and should be provided in the Final EIS, including the location of any wells in the project area, and chemistry and well yield data for water bearing formations. Including information on aquifer transmissivity and flow rates and directions throughout the project area will better identify potential areas for implementation of mitigation activities. Although the Draft EIS does briefly reference water quality monitoring to be performed for produced water injection operations, a complete monitoring plan and program to track any groundwater impacts as drilling and production operations occur should be included in the Final EIS.

EPA appreciates that the Draft EIS identifies the Bonanza, Utah, Drinking Water Source Protection Zone (DWSPZ), and that the DWSPZ will be protected in accordance with the requirements for the public water system. EPA recommends that the Final EIS address all requirements of the Safe Drinking Water Act (SDWA) related to water quality protection. EPA additionally recommends that No Surface Occupancy be required in DWSPZs. We would further appreciate disclosure of the location of Public Water Reserves (PWR), and the commitment to water quality protection through site-specific construction. Disclosure should include whether the PWRs are surface water, groundwater wells, or springs as well as list mitigation measures that will be required during site-specific permit reviews. The Draft EIS does not identify other existing or potential public or private drinking water supplies in the GNBPA, nor does it identify aquifer zones that are "underground sources of drinking water" under the SDWA. The document indicates that this information will be collected during site-specific reviews at the Application for Permit to Drill (APD) stage. The Final EIS should include a discussion of the viability of water bearing formations as underground sources of drinking water, which should include formation name, depth of formation, local outcrop of aquifer, chemistry of the formation water (including total dissolved solids, TDS), and well yield data for water bearing formations. A list and characterization of domestic and stock wells and springs within the project area and within one mile of the project boundary should be included in the Final EIS as well. The description of groundwater resources should identify the depths of the wells and what formations they are producing from. Deferring the evaluation of potential or existing drinking water supplies to the review of each well in the APD does not provide the opportunity for public comment nor does it provide analysis of cumulative environmental impacts to the aquifers.

BLM Utah has developed an excellent policy for the protection of ground water associated with oil and gas leasing, exploration and development (BLM Instruction

Memorandum No. UT 2010-055.) The purpose of the Instruction Memorandum is to enhance the existing process for the continued protection of all usable ground water zones (≤ 10,000 mg/L as defined in Onshore Oil and Gas Order No. 2) associated with oil and gas exploration and development. We recommend that the Final EIS incorporate the UT 2010-055 policy.

Water Quality Monitoring:

A monitoring plan and program should be in place to track any groundwater impacts as drilling and production operations occur. Monitoring should be conducted during all project phases, including: background conditions before construction begins; during project implementation, including construction, production, and produced water disposal; and after project termination. We recommend that the "Long-Term Plan for Monitoring of Water Resources" developed for the West Tavaputs Plateau Natural Gas Full Field Development Plan (West Tavaputs) Final EIS be used as a guide in developing a monitoring plan for GNB. Particularly critical components of the plan include baseline monitoring, inclusion of organic parameters in the monitoring suite, public disclosure of monitoring data, and discussion of mitigation measures to be employed if monitoring results in identification of impacts.

Mitigation:

The protection of groundwater and surface waters is a key issue to address in oil and gas development. It is EPA's understanding based upon field visits to the GNBPA that many groundwater protection mitigation measures are being implemented by industry in current oil and gas development operations. However, the extent to which such practices will be employed in the proposed GNB project is unclear from the Draft EIS. Mitigation measures should also be developed and implemented for this project to protect surface and ground water. Some recommended mitigation measures include:

- All pits should contain synthetic liners and be padded as necessary to prevent tearing or puncturing of the liner and fluid migration to the subsurface. Reclamation of pits to prevent spillage or leaching of waste to the surface or subsurface is also important.
- Closed-loop drilling should be considered, particularly for sites in sensitive areas such as those overlying aquifers or near stream channels.
- Surface casing should be installed below all fresh water zones (underground sources of drinking water) especially if there are springs or groundwater wells nearby. Given the unique properties of the Bird's Nest Aquifer, a drilling plan should be developed to ensure that all newly drilled production wells have adequate cement behind pipe across all underground sources of drinking water (USDWs).
- Production casing and cement with downhole bonding evaluation should be adequate to prevent fluid movement between formations with fluids (including gas) of different quality.
- BLM should conduct an area of review for existing production wells or plugged and abandoned wells within the GNBPA to assess whether these structures possess adequate construction to prevent fluid movement within the casing/well bore annulus.

The characteristics of the Bird's Nest Aquifer (BNA), which underlies approximately one-quarter of the GNBPA and is the proposed target for produced water disposal, may lead to difficulties in adequate casing construction for production and disposal wells. Additional mitigation measures beyond those suggested here may be appropriate for the proposed project; the Final EIS should identify all relevant and reasonable mitigation measures – both procedural and structural, and including specific measures for the BNA – to protect groundwater sources. We recommend that the "BLM Utah Oil and Gas Development Ground Water Protection Measures" included in the West Tavaputs Final EIS be added to the Final EIS for GNB as well.

In its discussion of groundwater impacts, the Draft EIS cites the results of the 2004 study conducted by EPA (pg. 4-123). In that study, EPA concluded that, based on information available at the time, there was little to no risk of fracturing fluid directly contaminating USDWs during hydraulic fracturing of coalbed methane production wells except where diesel was used. The activities discussed in this Draft EIS go beyond the scope of the 2004 study and so the study is not sufficient to support the Draft EIS assessment of risks to ground water. There are currently serious questions about whether the process of hydraulic fracturing could potentially result in groundwater impacts. Additionally, some hydraulic fracturing compounds contain materials that could be harmful if released to freshwater sources. The Final EIS should acknowledge this potential for impact. An analysis of the management of the fracturing fluids should be provided in the Final EIS, including the toxicity and fate of these fluids, with a focus on avoiding surface spills or leaks of these fluids from the reserve pits. Hydraulic fracturing of any production zones near freshwater zones should not be considered. This includes fracturing production zones that are not adequately separated from freshwater aquifers with zones of low permeability that would prevent fluid and gas migration.

Produced Water Disposal:

EPA also recommends the Final EIS include further detail and clarification on the proposed produced water management. Options for disposal of produced water were identified in section 2.4.2.5 of the Draft EIS but not evaluated within the alternatives assessment for the potential environmental impacts or benefits. The Draft EIS indicates that 15 new injection wells would be completed into the BNA to be used for produced water disposal, in addition to five existing disposal wells. EPA generally considers properly constructed and permitted disposal wells as an environmentally safe method for disposing of produced water. The information provided in the Final EIS, however, does not provide for an assessment of potential impact from disposal wells. The Final EIS should indicate where disposal wells are proposed, including a discussion of any aquifers in the northern portion of the GNBPA that could accept produced water, to prevent the need for transporting all water to the southeast portion of the project area overlying the BNA. The assessment of potential disposal well locations should include the flow regime in the area, which varies widely across the BNA. We further recommend that the BLM reassess the data used to describe water quality of GNBPA aquifers in the Draft EIS; updated information exists regarding the quality of water in the BNA. Areas of the BNA may be above the 10,000 mg/L TDS cutoff for consideration as an USDW but still have an opportunity for degradation with the anticipated 25,000 – 30,000 mg/L TDS concentrations anticipated in the

Draft EIS for produced water in the GNBPA. Areas where the BNA transitions from a non-USDW to a USDW should be identified. Finally, the Final EIS should acknowledge the complexities associated with constructing permittable disposal wells in the BNA, as described above, and discuss means for assuring adequate protection behind the pipe.

The Preferred Alternative also includes the possibility of trucking low-quality produced water that is ineligible for injection to existing water disposal and treatment facilities. The Final EIS should make clear what existing facilities will be used, what volume of water is anticipated to be disposed of in this manner, and the amount of hydrocarbons to be released from the evaporation basins. The decision to avoid surface evaporation pits may resolve many of EPA's concerns regarding potential impacts to air quality, water quality, and aquatic wildlife from on-site produced water surface impoundments and associated trucking activities. In addition, the Preferred Alternative indicates a potential for produced water to be used for hydraulic fracturing. EPA supports the idea of water recycling in oil and gas fields into producing zones, as it reduces the impacts of freshwater consumption. To fully disclose the potential for positive environmental impacts from water conservation through recycling of produced water, additional information is needed in the Final EIS, including the volume of water that may be recycled, whether this water will be used within the GNBPA or elsewhere in the Uinta Basin, how water will be transported, spill and leak prevention plans, and what alternatives for reuse in enhanced recovery processes are proposed.

Freshwater Consumption:

Each of the 3,675 proposed wells in the preferred alternative will require approximately 16,000 bbls (2.06 acre feet) of water (2.5.3.4). It is proposed that fresh water from other sources be obtained from commercial water supply sources, including both groundwater and surface withdrawals from the Green River. The associated environmental impacts of the use of this fresh water should be evaluated in the Final EIS (see the following section related to Special Status Species).

Water Resources – Surface Water Quality

EPA considers impacts to surface water from runoff a substantial concern for the proposed project. Runoff of sediment and salts has been noted as a concern in the GNBPA. Willow Creek is already noted as impaired for TDS. Elevated TDS concentrations have been noted in other streams in the GNBPA as well. Salinity in the Colorado River watershed continues to be a concern, as evidenced by the Colorado River Salinity Control Act passed in 1974. EPA appreciates the historical analysis of water quality impacts in the GNBPA that was performed for the Draft EIS. Based upon the information presented in the Draft EIS, we believe that salt and sediment concerns for surface water in the project area should be given significant attention during planning and construction for GNB. The surface water quality analysis in the Draft EIS presents a strong case that surface disturbances associated with oil and gas in the GNBPA, when combined with natural conditions of the area, will likely contribute to total suspended solids (TSS) and TDS in the watershed.

EPA is pleased with the selection of the Resource Protection Alternative as the Preferred Alternative due to its reduced surface disturbance. We additionally appreciate the inclusion of Applicant Committed Environmental Protection Measures (ACEPMs) in Appendix A, particularly KMG's commitment to employ best management practices (BMPs) to control stormwater runoff and prevent sediments from reaching the drainages. However, due to known TSS and TDS concerns in the GNBPA, EPA believes that these BMPs should be described in the Final EIS in adequate detail for the reader to assess their potential effectiveness.

The Draft EIS states that increases in turbidity, sediment, and salinity from GNB are anticipated to occur in the White River and its major tributaries, and potentially downstream into the Green River. The magnitude of the impacts will depend on "the implementation, success, and maintenance of control measures" (pg. 4-115). Therefore, the Final EIS should disclose how these three factors will be managed to ensure success of the BMPs. EPA recommends that BLM implement a comprehensive water monitoring plan to ensure that the BMPs are successfully minimizing and mitigating the impacts from increased salt and sediment runoff. At a minimum, we recommend that BLM establish a monitoring program in White River and Willow Creek. The "Long-Term Monitoring Plan for Water Resources" developed by BLM for the West Tavaputs Final EIS is a good example of a comprehensive monitoring program, as discussed in greater detail above.

Wetlands

EPA understands from the Draft EIS that a compilation of sources have been used to piece together wetland information across the project area, however wetland resources have not been fully characterized within the GNBPA. EPA therefore questions the reliability of the conclusion that there are no known occurrences of isolated wetlands in the project area. Based upon our knowledge of the area and similar areas adjacent to the proposed development, we believe that isolated wetlands are likely to be present. We recommend that BLM further assess whether isolated wetlands may be present in the GNBPA. If this is not possible, the Final EIS should address protective measures in the case of encountering an isolated wetland or near surface perched aquifers during project construction. Isolated wetlands may also be impacted by water withdrawals from shallow aquifers. The Final EIS should clearly address whether this potential impact is a concern for GNB.

EPA notes that section 3.13.2.2 – Regulatory Coordination should describe regulation and permitting processes in Indian country according to Clean Water Act (CWA) Section 401 in addition to CWA Section 404, which applies to activity on all (or nearly all – see Jurisdiction discussion below) of the lands within the GNBPA. Further, the Final EIS should reference Executive Order (EO) 11990 – Protection of Wetlands and describe how actions authorized through the GNB NEPA process will comply with the EO.

EPA recommends that further information regarding commitment to avoidance of wetlands be included in the Final EIS. While we are pleased that BLM restricts surface

disturbance in riparian habitats on BLM-administered lands, this restriction should be extended to all lands that may be disturbed by the proposed project, regardless of surface ownership, and should include isolated wetlands and springs as well. We recommend that such a commitment be secured from the operator, and included in the Final EIS. The Final EIS should further include information regarding mitigation for any unavoidable impacts to wetlands or other waters of the U.S. from construction, particularly during water body crossings. As the Draft EIS states that mitigation in the GNBPA will be difficult due to the arid climate and presence of invasive species, it is critical that impacts be avoided if possible, then minimized to the maximum extent practicable. If impacts are unavoidable, an appropriate mitigation plan will be necessary to ensure that successful compensation occurs.

Environmental Justice

As the CEQ guidance on considering Environmental Justice (EJ) under NEPA notes, Executive Order 12898 requires federal agencies to consider "whether there may be disproportionately high and adverse human health or environmental effects on minority populations, low-income populations, or Indian tribes" from a proposed action. In accordance with CEQ guidance on identifying minority and low-income communities, EPA believes that the communities within the Uintah and Ouray Indian (U&O) Reservation that were enumerated by the 2000 U.S. Census (Fort Duchesne, Randlett, and Whiterocks), all of which have greater than 50% of residents in poverty and greater than 90% minority residents, should be treated as EJ communities for the purposes of the NEPA analysis.

Consequently, EPA does not agree with the statement in the Draft EIS that the GNBPA itself and the associated well field development "would not be in proximity to any low-income, minority, or Tribal communities" (pg. 4-60). This assertion does not account for the acknowledged impacts on both dispersed populations and the communities affected by the proposed project. The community of Ouray is located less than 1 mile from the GNBPA. Although this small community was not enumerated in the 2000 U.S. Census, it likely possesses similar population characteristics to nearby Randlett. EPA's opinion, therefore, is that the area affected by the proposed project will contain EJ communities, and so the human health, economic, and social effects of the proposed action on potential EJ communities should be thoroughly evaluated in the Final EIS for GNB.

Additionally, the EJ analysis should define the affected area based on the location of environmental impacts, not merely on proximity, and the analysis should take into account whether EJ communities use subsistence or cultural resources that may be affected by the proposed project. The nature of the project's rural setting should also be considered. For example, the simple act of shopping for groceries may involve a twenty or thirty mile drive. Fort Duchesne and Randlett are approximately 18 miles and 13 miles away, respectively, from the GNBPA. EPA is willing to assist BLM in identifying minority, low-income, or tribal communities that may be impacted by the proposed project.

EPA also does not believe that the analysis presented in the Draft EIS supports the conclusion that "no adverse environmental justice impacts would result under the Resource

Protection Alternative" (pg. 4-69). The document does not discuss the potential for disproportionately high adverse human health and environmental impacts from the proposed project. We recommend that potential human health and environmental impacts on minority, low-income, or tribal communities be added to the discussion in the Final EIS. According to CEQ guidance, the identification of an adverse impact to EJ populations should heighten attention to alternatives, mitigation strategies, monitoring needs, and preferences expressed by the affected community. Therefore, we also recommend that BLM implement a public participation process that allows these communities an opportunity to identify potential impacts.

Oil and gas development frequently results in environmental impacts that could be of particular concern to the health of local residents, particularly with regards to air quality and water quality. Since potential air and water quality impacts from this project have been identified, BLM's EJ analysis should evaluate whether the proposed project may result in environmental or human health impacts to minority, low-income, or tribal communities in the area. If impacts to these communities are identified, BLM should explore whether additional mitigation strategies will be sufficient to reduce those impacts (e.g. mitigation strategies should reduce incremental increase in ozone to acceptable levels).

EPA has several recommendations for additional discussion that should be added to the EIS regarding potential air quality impacts to EJ populations. We will discuss these issues with BLM during development of the air quality supplement to the Draft EIS. EPA recommends that the following additional discussion be added to the Final EIS regarding potential water quality impacts to EJ populations:

1. A list of domestic and stock wells within one mile of the project area
2. A list of public water supply wells within 5 miles of the project area.
3. The discussion of where disposal wells are proposed to be located should include an evaluation of surrounding communities and possible impacts to those communities from the proposed disposal wells.

EPA does not believe that the analysis presented in the Draft EIS supports the conclusion that "no adverse environmental justice impacts would result under the Resource Protection Alternative" (pg. 4-69) for other important reasons. For example, the Draft EIS acknowledges and discusses the adverse impacts of its project on hunting, grazing, housing prices and quality of life. Added demand for housing will drive up prices and make it more difficult for low income persons to find affordable housing. Potential adverse effects to the quality of life of residents of the region would include "declines in personal feelings of satisfaction with the community as a place to live during the most rapid periods of growth... related to perceptions of the friendliness, neighborliness, and trustworthiness of other residents; security, safety and risk of victimization by crime; and how satisfying community life is in general" (pg. 4-68). The issues identified here are highly important to a community and put particular pressures on already vulnerable populations.

EPA recognizes that the proposed action would likely bring royalty revenues from

production from Tribal mineral interests to Tribal members, and that GNB may therefore be beneficial to EJ populations from an economic standpoint. However, the Draft EIS has recognized social and economic impacts and potential adverse effects to the quality of life. Examples of mitigation for these social and economic impacts may include outreach to low income and tribal persons to provide counseling on finding affordable housing, consultation with those who use the land for recreational and spiritual purposes, and providing job training for local residents to take advantage of the project's employment opportunities. To address the quality of life issues, the company might consider sponsoring activities with local groups to increase the feeling of community. A community meeting to identify and discuss mitigation opportunities could be very productive.

Climate Change:

With regard to the greenhouse gas (GHG) and climate change Draft EIS discussion, we found the GHG emission information contained in Table 4.1-8 Detailed Summary of GHG Emissions by Source for the Proposed Action Alternative to be particularly informative. It is unclear from the text of the Draft EIS, however, whether these are annual or total GHG emissions expected over the lifetime of the proposed action. To fully inform the decision makers and the public of the proposal's GHG emissions and potential climate change impacts, we believe the Final EIS should quantify the expected aggregate GHG emissions from the proposed project; translate the emissions into equivalencies that are easily understood from the public standpoint (e.g. annual GHG emissions from x number of motor vehicles, see http://www.epa.gov/RDEE/energy-resources/calculator.html); and qualitatively discuss the link between the proposal's GHG emissions and climate change. We also note that the Draft EIS does not include discussion of end use GHG emissions. Because they are easily calculated and may be of interest to the public in obtaining a complete picture of the GHG emissions associated with the proposed project, it may be helpful to provide a quantitative estimate of these emissions.

In addition, we recommend that the proposal's estimated annual GHGs be put in a relevant context by comparing them to statewide annual emissions and describing how the project's emissions may affect any Regional, Tribal or State climate change initiatives, such as the Governor's Blue Ribbon Advisory Council on Climate Change, 2007 Final Report, (http://www.deq.utah.gov/BRAC_Climate/final_report.htm), Utah's GHG reduction goals (to reduce GHG emissions to 2005 levels by 2020), (http://www.deq.utah.gov/Climate_Change/GHG_goal.htm) and the Western Climate Initiative (http://www.westernclimateinitiative.org). The Final EIS should analyze in detail potential means to mitigate the proposal's GHG emissions and disclose the estimated GHG reductions associated with such measures. EPA recommends that BLM's ROD commit to implementation of reasonable mitigation measures that would reduce or eliminate project-related GHG emissions. Finally, we recommend adding a summary discussion of ongoing and projected regional climate change impacts relevant to the action area based on U.S. Global Change Research Program assessments. Similarly, EPA recommends that the Final EIS identify any potential need to adapt the proposed action to these effects, as well as any potential impacts from the proposed action that may be exacerbated by climate change.

Impacts to Special Status Species

The Draft EIS predicts that GNB may have population-level impacts on the greater sage-grouse, which is listed as a federal Candidate species as well as a wildlife species of concern by the Utah Division of Wildlife Resources (UDWR). CEQ regulations require that the "environmental consequences" section of an EIS address "[p]ossible conflicts between the proposed action and the objectives of federal, regional, state, and local . . . land use plans, policies and controls for the area concerned" (40 C.F.R. § 1502.16(c)). Consistent with these requirements, the Final EIS should fully explore possible conflicts and inconsistencies between the proposed action and sage-grouse-related plans and policies. UDWR has published a "Greater Sage-Grouse Management Plan" (UDWR, 2009, http://wildlife.utah.gov/uplandgame/sage-grouse/pdf/management_plan_2009.pdf) to "protect, maintain, and improve sage-grouse populations and habitats" for the greater sage-grouse within Utah. The Uinta Basin Adaptive Resource Management Local Working Group has also developed a Uinta Basin Greater Sage-Grouse Local Conservation Plan (http://utahcbcp.org/files/uploads/uintah/ubarmsagrplan.pdf). BLM should ensure that the proposed project does not conflict with either of these plans.

EPA appreciates the mitigation measures that have been proposed in the Draft EIS to protect leks and brooding habitat during critical seasons. However, according to the Draft EIS, the proposed measures "would not be sufficient to protect the East Bench population" (pg. 4-157). For the West Tavaputs Project, the U.S. Fish and Wildlife Service (FWS) has recommended that "no new surface disturbance associated with [the] EIS be allowed within greater sage grouse brooding and wintering habitats." EPA believes that BLM should consider following this recommendation for GNB as well. Additionally, if development in these habitats is allowed to proceed for GNB, we recommend implementing the following conservation measures developed by FWS for West Tavaputs:

1. Topography and the latest muffling technology should be used to ensure noise levels do not exceed 45dB within 5 km (3.1 miles) of a lek;
2. No surface disturbing activities should occur within identified crucial wintering habitat between December 1 and March 15 (Figure 3.10-2 within EIS);
3. No permanent structures or facilities should be developed within identified crucial wintering habitat; and
4. Well density should not exceed 1 well pad per square mile within sage-grouse brooding habitat

Seven special status fish species have the potential to occur within the GNBPA, and may be affected by water withdrawals from the Green and White Rivers. The proposed action would result in an estimated consumption of 757 acre-feet per year from the Colorado River Basin during the construction phase (7, 571 acre-feet total). The amount of fresh water to be purchased for use as part of the GNB project and the cumulative impacts of other projects in the area may be significant and may have the potential to impact aquatic special status species by reduction in

water flow. EPA recommends that additional emphasis be placed on reuse of produced water to reduce water consumption impacts on Colorado River endangered fish species.

Regarding special status plant species, EPA is pleased that BLM has worked with FWS to develop Conservation Measures to protect the Clay Reed-mustard, Uinta Basin Hookless Cactus, and Graham's Beardtongue. We appreciate the inclusion of the Conservation Measures as Appendices to the Draft EIS.

Jurisdiction

It appears that the project location is entirely (or very nearly so) within the southeastern portion of the U&O Reservation, which is known as the Uncompahgre Reservation. The Tenth Circuit Court of Appeals has determined that all lands within the Uncompahgre Reservation are Indian country as defined at 18 U.S.C. Section 1151. *Ute Indian Tribe v. Utah*, 773 F.2d 1087 (10th Cir. 1985) (en banc), *cert. denied*, 479 U.S. 994 (1986); *Ute Indian Tribe v. Utah*, 114 F.3d 1513 (10th Cir. 1997), *cert. denied*, 522 U.S. 1107 (1998). EPA has not approved the State of Utah or the Ute Indian Tribe to implement federal environmental programs in Indian country. Therefore, under the relevant case law, within the Uncompahgre Reservation (as well as all other Indian country lands within the U&O Reservation) EPA is the appropriate governmental authority to issue federal environmental permits, conduct inspections, take enforcement actions, and take any other actions pursuant to our statutes and authorities. The Final EIS should be revised to correctly identify the appropriate permitting agencies. For instance, Table 1.5-1 states that the Utah Department of Environmental Quality will be responsible for issuing various permits under federal environmental laws. Instead, to the extent the project is in Indian country, EPA would be the agency responsible for these permits. EPA has this responsibility regardless of the surface ownership of the land. In addition, relevant Tribal environmental laws should be referenced in the Final EIS along with BLM regulations as applicable. We note that the Bureau of Indian Affairs (BIA) has particular expertise as to Indian country questions. You may wish to consult with BIA on the status of the project location.

EPA recommends that BLM perform the following coordination with the Ute Indian Tribe, and reference relevant authorities where appropriate in the Final EIS:

- Cultural Resource consultation should include the Tribal Historic Preservation Officer.
- The Ute Indian Tribe Energy and Minerals Department regulates oil and gas development within the U&O Reservation, and should be contacted regarding resource protection measures on Tribal lands.
- The Tribal Wetland program is implementing wetland mitigation projects.
- The Tribal Environmental Program of the Ute Indian Tribe should also be contacted regarding environmental regulations on Tribal lands.

EPA is concerned that the discussion of applicable regulations or restrictions to protect resources within the GNBPA is generally limited to those that apply on lands administered by

the BLM. As the lead agency for this project, is it BLM's responsibility to analyze and disclose all impacts associated with the proposed action, including those that will occur on Tribal, state, or private lands. EPA notes with concern that the Environmental Consequences discussion for Water Resource (Section 4.13) in particular focuses only on resource protection measures that will be implemented on BLM-administered land, stating "The selection and implementation of resource protection measures by the BLM might not extend to Tribal, state, or private surfaces within the GNBPA" (pg. 4-111). The Draft EIS later states, "For all project alternatives, any existing or additional water resources measures would reflect applicable guidelines and programs of the agencies (e.g., BLM, BIA, UDOGM, USEPA) based on surface ownership, agency resource management roles, and interagency agreements." While EPA is pleased that BLM has recognized the need to comply with all applicable regulations, we believe that the implications of these regulations need to be considered in the Final EIS to ensure accurate representation of potential environmental impacts. Additionally, the Final EIS should make clear whether measures WATER-1 through WATER-7 (Section 4.13.2.4 Mitigation and Mitigation Effectiveness, pg. 4-124) apply to development throughout the GNBPA or on BLM-administered land only.

Spill Prevention

Recent events have led EPA to become acutely aware of the risks inherent in oil and gas development operations. We believe that NEPA analyses should address reasonably foreseeable impacts from low probability catastrophic spills, and spill prevention measures that are in place to prevent these impacts. EPA is pleased that the implementation of a Spill Prevention, Control, and Countermeasures Plan (SPCCP) will reduce the potential for direct and indirect impacts to sensitive resources from spills or accidental releases of hazardous substances. KMG has committed to develop and maintain site-specific SPCCPs for each GNBPA production facility. We appreciate that an example SPCCP has been included in the Draft EIS as Appendix D, however, we believe that it is critical that all SPCCPs are appropriately designed given local geology and the level of risk associated with local conditions. We recommend that BLM describe in the Final EIS how site-specific SPCCPs will address low probability catastrophic spills.

Reclamation Potential

The Draft EIS identifies several potential project-area issues with regard to potential for successful reclamation. Accelerated erosion related to oil and gas access roads is an ongoing problem in the GNBPA. Further, EPA is concerned that 95% of the soil disturbance associated with the Preferred Alternative will take place in soils that have been identified as highly constrained for reclamation potential due to nutrient status, elevated salinity and sodicity, and coarse fragment content. Biological soil crusts also occur within the GNBPA on undisturbed soils, and the Preferred Alternative would potentially disturb 8.147 acres of these crusts. Biological soil crusts serve several critical ecosystem functions, including stabilizing soils. According to the Draft EIS, successful reclamation is difficult in the Uinta Basin, particularly for desert shrub, perennial grasslands/sagebrush communities, and pinyon-juniper communities.

Reestablishment of plant communities can take as long as 100 years for pinyon-juniper woodlands. Such an extended reclamation period for soil disturbance leads to high susceptibility to noxious plant invasion, and increased potential for soil erosion and associated impacts including sedimentation and airborne dust. The airborne dust poses potential health concerns, particularly for residents of nearby communities. In addition, long distance transport of fugitive dust out of the basin may contribute to dust-on-snow events in the mountains. Dust on snow can accelerate snowmelt, resulting in reduction in stream flow during the later part of the season.

EPA is pleased that measures have already been proposed in the Draft EIS to minimize surface disturbance. The selection of the Resource Protection Alternative significantly reduces surface disturbance by minimizing the number of well pads. Additionally, the ACEPMs include minimizing construction of roads through a Transportation Plan. EPA also appreciates that Anadarko's standard Reclamation Plan has been included in the Draft EIS as Appendix E. Due to the large amount of surface disturbance associated with the proposed project and the sensitivity of the soil resource, EPA believes that further efforts to reduce surface disturbance and promote successful reclamation are warranted for GNB. Travel management in the project area should be designed for maximum reduction in soil and vegetation impacts. Access roads and well pads should be sited to avoid highly constrained areas and biological soil crusts whenever possible. Impacts associated with access roads should be reduced to the maximum extent practicable, by utilizing transportation planning to establish proper road location and design, and using primitive two-track roads where possible. We further recommend that a project-specific Reclamation Plan be developed and included in the Final EIS.

U.S. Environmental Protection Agency Rating System for Draft Environmental Impact Statements

Definitions and Follow-Up Action*

Environmental Impact of the Action

LO - - Lack of Objections: The Environmental Protection Agency (EPA) review has not identified any potential environmental impacts requiring substantive changes to the proposal. The review may have disclosed opportunities for application of mitigation measures that could be accomplished with no more than minor changes to the proposal.

EC - - Environmental Concerns: The EPA review has identified environmental impacts that should be avoided in order to fully protect the environment. Corrective measures may require changes to the preferred alternative or application of mitigation measures that can reduce these impacts.

EO - - Environmental Objections: The EPA review has identified significant environmental impacts that should be avoided in order to provide adequate protection for the environment. Corrective measures may require substantial changes to the preferred alternative or consideration of some other project alternative (including the no-action alternative or a new alternative). EPA intends to work with the lead agency to reduce these impacts.

EU - - Environmentally Unsatisfactory: The EPA review has identified adverse environmental impacts that are of sufficient magnitude that they are unsatisfactory from the standpoint of public health or welfare or environmental quality. EPA intends to work with the lead agency to reduce these impacts. If the potential unsatisfactory impacts are not corrected at the final EIS stage, this proposal will be recommended for referral to the Council on Environmental Quality (CEQ).

Adequacy of the Impact Statement

Category 1 - - Adequate: EPA believes the draft EIS adequately sets forth the environmental impact(s) of the preferred alternative and those of the alternatives reasonably available to the project or action. No further analysis of data collection is necessary, but the reviewer may suggest the addition of clarifying language or information.

Category 2 - - Insufficient Information: The draft EIS does not contain sufficient information for EPA to fully assess environmental impacts that should be avoided in order to fully protect the environment, or the EPA reviewer has identified new, reasonably available alternatives that are within the spectrum of alternatives analyzed in the draft EIS, which could reduce the environmental impacts of the action. The identified additional information, data, analyses or discussion should be included in the final EIS.

Category 3 - - Inadequate: EPA does not believe that the draft EIS adequately assesses potentially significant environmental impacts of the action, or the EPA reviewer has identified new, reasonably available alternatives that are outside of the spectrum of alternatives analyzed in the draft EIS, which should be analyzed in order to reduce the potentially significant environmental impacts. EPA believes that the identified additional information, data, analyses, or discussions are of such a magnitude that they should have full public review at a draft stage. EPA does not believe that the draft EIS is adequate for the purposes of the National Environmental Policy Act and/or Section 309 review, and thus should be formally revised and made available for public comment in a supplemental or revised draft EIS. On the basis of the potential significant impacts involved, this proposal could be a candidate for referral to the CEQ.

* From EPA Manual 1640 Policy and Procedures for the Review of Federal Actions Impacting the Environment. February, 1987.